

Review Problem 4.1 Given the following data set:

x	19	9	5	1	12	6	4
y	0	4	7	12	3	7	9

1. Find the five-statistic summary.
2. Find the equation of the regression line.
3. Predict the value of y if $x = 10$.
4. Predict the value of x if $y = 10$.
5. Estimate the magnitude of the residuals when predicting y from x .
6. Do you think that a linear model is appropriate for this data? Explain.

Review Problem 4.2 For a large population of men:

$$\begin{aligned} \text{Avg height} &= 71 \text{ in} \\ \text{SD height} &= 3 \text{ in} \\ \text{Avg weight} &= 182 \text{ lb} \\ \text{SD weight} &= 35 \text{ lb} \\ r &= 0.52 \end{aligned}$$

1. Predict the weight of a man who is 68 inches tall.
2. Predict the height of a man who weight 200 pounds.

Review Problem 4.3 Find the best fit of the following data to the model $y = a + bx^2$.

x	1	-2	-1	4	-3	3
y	0	-1	4	-38	-12	-14

Review Problem 4.4 Find the best fit of the following data to the model $y = ae^{bx}$.

x	89	79	37	65	14	51
y	11	18	150	37	482	76

Review Problem 4.5 Find the best fit of the following data to the model $y = \sqrt{a + bx^3}$.

x	0.9	3.1	0	3.8	2.9	2
y	31.6	32.6	31.6	33.3	32.3	31.8

Review Problem 4.6 Over 1000 steel pins are sampled and categorized with respect to both length and width. The results are shown in the table below. Does it appear that the classifications of length and width are independent?

	Too Thin	Correct Width	Too Thick
Too Short	13	117	4
Correct Length	62	664	80
Too Long	5	68	8

Review Problem 4.7 In a survey of many families with 3 children, the number of girls are reported in the table below. Is this data consistent with a Binomial(3,1/2) distribution?

Hint: To get started, use the Binomial(3,1/2) distribution to find the probabilities of getting 0 girls, 1 girl, 2 girls, and 3 girls. Then use these probabilities to find the expected numbers.

Number of girls	Observed Number
0	76
1	280
2	302
3	116